

Background information containing research articles, studies, analysis and publications on masking, mask mandates and school prevention efforts.

Publications/Articles

Date	Source/Site	Article Title	Notes/Statements	
August 5, 2021	CDC.gov	Guidance for COVID-19 Prevention in K-12 Schools	<i>Given new evidence on the B.1.617.2 (Delta) variant, CDC has updated the guidance for fully vaccinated people. CDC recommends universal indoor masking for all teachers, staff, students, and visitors to K-12 schools, regardless of vaccination status. Children should return to full-time in-person learning in the fall with layered prevention strategies in place.</i>	Official Publication
April 19, 2021	CDC.gov	Guidance for Wearing Masks	<i>CDC Guidance updated April 2021</i>	Guidance
March 6, 2021	COVID Collaborative, Brown School of Public Health	Layered Infection Prevention and Control Measures Allow Return to Safe In-Person Learning	<i>In this consensus statement, a group of leading scientists confirms and explains the evidence-base on which effective IPC programs are built. The scientific basis for these IPC measures has expanded even further in recent months, and the latest CDC guidance reflects this matured body of evidence</i>	Official Publication
May 7, 2021	CDC.gov	Science Brief: Community Use of Cloth Masks to Control the Spread of SARS-CoV-2	<i>Data were added from studies published since the last update that further demonstrate that mask wearing reduces new infections.</i>	Official Publication
July 23, 2021	Public Health Ontario	Mask Wearing in Children and COVID-19- What We Know So Far	<i>The updated version provides additional evidence for mask use in children and examines mask wearing behaviors in children and the potential impacts of wearing masks.</i>	Official Publication
May 9, 2021	Medrxiv.org	Statewide Mask Mandates Decline in COVID-19 Hospitalizations	<i>MASK MANDATES REDUCE COVID-19 MORTALITY: Analysis of 37 States and the District of Columbia, with a further analysis of the impact of demographic and medical factors on efficacy</i>	Official Publication

February, 26, 2021	MCAAP.org	Updated Massachusetts AAP Policy on Safe In-Person Learning	<i>Real-world evidence from many districts in Massachusetts and across the nation who have demonstrated successful return to school programs in either a full or hybrid model by implementing rigorous evidence-based safety protocols</i>	MCAAP Position Statement
August 3, 2021	Gallup News/Poll	U.S. K-12 Parents Support Mask Mandate, Divided on Vaccines	<i>Recent Gallup polls and references, article</i>	Article with Polls, Graphs, Charts
August 23, 2021	AP News	School mask, vaccine mandates supported in US: AP-NORC poll	<i>About 6 in 10 Americans say students and teachers should be required to wear face masks while in school, according to a poll from The Associated Press-NORC Center for Public Affairs Research. Similar shares say teachers and eligible students should also be required to receive a COVID-19 vaccine.</i>	Article with Polls, Graphs, Charts
August 23, 2021	APNORC	Support for mask and vaccine mandates in schools	<i>As the Delta variant surges, about 60% of adults feel both students and teachers should be required to wear face masks while in school as a response to the pandemic, and a majority support a COVID-19 vaccine mandate for teachers (59%) and students age 12 and older (55%).</i>	Polls, Graphs, Charts
May 10, 2021	British Medical Journal	BMJ- Covid-19: Don't abandon mask wearing in schools, say health experts	<i>Leading scientists have warned that guidance on masks should remain in place for longer and called for more transparency surrounding infections data. They cited signs of an increase of infections in schools that are forcing some to close and the spread of troubling new virus variants linked to schools.</i>	Official Publication
September 3, 2021	DistrictAdministration.com	School mask tracker: Who is and isn't loosening the rules	<i>A rolling summary of school districts and masking mandates, and policy changes</i>	News Article
August 1, 2021	Children's Hospital of Philadelphia- Policy Lab	Assisting Childhood Education through Increased Testing	<i>Starting in early 2021, with support from Children's Hospital of Philadelphia (CHOP), local health departments, and education leaders across southeastern Pennsylvania, we launched Project: ACE-IT, and its work has been growing and evolving ever since. Project: ACE-IT aims to reduce the risk of in-school COVID-19 transmission through the use of rapid, point-of-care COVID-19 testing and has bolstered confidence that safe, in-person learning is possible.</i>	Testing Article

March 16, 2021		Growing Opportunities for COVID-19 Testing Programs in U.S. Schools	<i>Regular COVID-19 surveillance and assurance testing (surveys of specific school populations to help identify asymptomatic cases) can supplement other safety measures to help provide another layer of protection for in-person learning. Despite strong interest in using testing to assist in safe school reopening, most U.S. school districts have not adopted the practice. Even when they do so, their programs are often limited to school staff or symptomatic individuals. Most school districts continue to lack cohesive plans surrounding testing.</i>	Testing Article
January 4, 2021	Bio reference Labs	OPKO Health's Bio Reference Laboratories Reports Results of the Largest COVID-19 Public School Testing Program Nationwide	<i>In September, Bio Reference embarked on a journey in collaboration with New York City Health and Hospitals to bring school back and help keep teachers and students safe throughout the school year by doing testing in schools</i>	News Article
November 1, 2020	National Academies of Science, Engineering and Medicine	NASEM Reopening K-12 Schools During the COVID-19 Pandemic: Prioritizing Health, Equity, and Communities (2020)	<i>Ideally, all students and staff, including elementary children, should wear fabric face coverings or surgical masks. For teachers and staff, N95 masks would be most effective, but would be difficult to teach in. Surgical masks offer better protection than cloth masks, but may not be available. Requiring only staff to wear masks is less effective because the fabric face coverings recommended by the CDC do not fully protect the wearer from droplets. Rather, the masks are most effective for reducing spread from people who are infected by containing droplets. Children in early elementary grades, especially kindergartners, may have difficulty complying with mask usage. Nonetheless, efforts should be made to encourage compliance.</i>	Research Report
July 17, 2021	American Academy of Pediatrics	American Academy of Pediatrics COVID-19 Guidance for Safe Schools	<i>AAP: "All students older than 2 years and all school staff should wear face masks at school (unless medical or developmental conditions prohibit use).The AAP recommends universal masking in school at this time"</i>	Official Publication
June 29, 2021	Duke Health-ABC Science Collaborative	Widespread use of masks in schools can effectively prevent COVID-19 transmission and provide a safe learning environment	<i>The ABC Science Collaborative is funded through the National Institutes of Health. The program is coordinated by the Duke School of Medicine and the Duke Clinical Research Institute.</i>	Research Report

June 29, 2021	Duke Health-ABC Science Collaborative	K-12 Schools Reopened Safely, Paving the Way for Schools Nationwide to Limit COVID-19 Spread in the Classroom	<i>The ABC Science Collaborative is funded through the National Institutes of Health. The program is coordinated by the Duke School of Medicine and the Duke Clinical Research Institute.</i>	Research Report
April 2021	RAND Corporation	COVID-19 Testing in K-12 Schools, Insights from Early Adopters	<i>This report describes approaches that early adopters of COVID-19 testing in U.S. K-12 schools were using as of December 2020, highlighting key facilitators that made testing feasible, acceptable, and effective in these schools.</i>	Research Report
March 6, 2021	RAND Corporation	COVID-19 Testing in Schools Complex But Doable, Worth the Effort	<i>Shows that COVID-19 testing can be effectively integrated into K-12 schools' pandemic response plans, helping families and staff feel more comfortable with in-person instruction.</i>	Summary Report
April 1, 2021	Rockefeller Foundation	K-12 National Testing Action Program	<i>Sliddeck with an overview of NTAP program, includes key stats and figures, key partners</i>	Sliddeck
February 4, 2021	Mathematica	New Evidence for Safely Reopening K-12 Schools: Testing Can Reduce Infections and Increase Confidence	<i>The reports found that weekly testing of all students, teachers, and staff can reduce in-school infections by an estimated 50 percent and would give teachers the peace of mind to return to the classroom.</i>	Summary Report
November 1, 2020	Harvard TH Chan School of Public Health	Harvard T.H. Chan School of Public Health Healthy Schools: Risk Reduction Strategies for Reopening Schools	<i>As part of a multi-layered strategy that includes physical distancing and other control measures, face masks are an effective way to mitigate transmission from individuals who are infectious, even when they do not have symptoms. When worn properly, masks limit the spread of droplets and smaller aerosols when people breathe, speak, cough, or sneeze. This is called "source control." Masks can also help protect their wearers against COVID-19.</i>	Research Report
			<i>Healthy Policies: Promote viral testing, page 43: Testing to identify actively infectious people should be prioritized in schools.</i>	Research Report
August 23, 2021	National Institutes of Health	How Kids Can Go Back to School Safely	<i>NIH highlights successful mask to school policies</i>	Summary Report

July 23, 2021	University of Oxford	Daily contact COVID-19 testing for students effective at controlling transmission in schools	<i>Overview of a study by the University of Oxford has found that daily testing of secondary school students who were in contact with someone with COVID-19 was just as effective in controlling school transmission as the current 10-day contact isolation policy.</i>	Summary Report
August 30, 2021	Baltimore Sun	Maryland schools need a Test-to-Stay program	<i>An overview and review of school based testing and test to stay policy</i>	News Article
November 1, 2020	WPS, United Health	COVID-19 Testing in K-12: Wellesley, MA Public Schools	<i>In Oct. 2020, Wellesley Public Schools began weekly viral testing for all staff and for all middle and high school students. In the first 10 weeks of testing, the WPS program performed 18,083 tests and identified 19 positive cases through the program, including one cluster of in-school transmission. Spread was contained through a 2-week targeted school closure. Baseline testing reassured parents (39% prior to 87% post baseline testing) and staff (12% prior to 82% post baseline testing) of the safety of in-person learning. 97% of staff reported that they are more comfortable with in-person learning due to the weekly testing of staff and students.</i>	Summary Report
July 26, 2021	Mathematica	Implementing Routine COVID-19 Testing in Schools Can Significantly Reduce (and in Some Cases Eliminate) Transmission	<i>An update to Implementing COVID-19 Routine Testing in K-12 Schools: Lessons and Recommendations from Pilot Sites, is based on the experiences of education and public health leaders who implemented school-based testing through The Rockefeller Foundation's K-12 Testing Protocol Demonstration Project.</i>	Summary Report
January 24, 2021	USA Today	With robust testing, we can open schools this spring before the vaccine is widely available	<i>Medical Opinion research commentary</i>	Medical Opinion research commentary
August 13, 2021	ScienceNews.Org	How different COVID-19 testing plans can help keep kids safe in school	<i>An overview and review of school based testing strategies, and test to stay policy</i>	News Article

August 30, 2021	Children's Hospital Association	Children's Hospital Association	<i>CHA ran an open letter signed by children's hospital leaders as full-page advertisements in the Sunday New York Times and Los Angeles Times encouraging all eligible Americans to receive the COVID-19 vaccine, mask responsibly and adhere to the proven practices of social distancing and handwashing in an effort to better protect children.</i>	Official Publication
February 1, 2021	NY Times	Rhode Island Kept Its Schools Open. This Is What Happened.	<i>News article discussing the actions and policies in Rhode Island</i>	News Article
August 28, 2021	Washington Post	A Calif. elementary school teacher took off her mask for a read-aloud. Within days, half her class was positive for delta.	<i>A Calif. elementary school teacher took off her mask for a read-aloud. Within days, half her class was positive for delta. A CDC-funded simulation projects that without masking or testing, more than 75 percent of children could be infected within three months.</i>	News Article
NA	Ariadne Labs, Parabola Project	Key Recommendations	<i>Masks work. Requiring all children and staff to wear a cloth or medical mask that covers both the mouth and nose at all times is one of the most important ways to contain the spread of COVID-19. The data is overwhelming for their use, and universal masking with a mandate is more effective than voluntary compliance.</i>	Resource Page
January 26, 2021	CDC MMWR	MMWR- COVID-19 Cases and Transmission in 17 K–12 Schools	<i>With masking requirements and student cohousing, transmission risk within schools appeared low, suggesting that schools might be able to safely open with appropriate mitigation efforts in place.</i>	Official Publication
March 19, 2021	CDC MMWR	MMWR- Pilot Investigation of SARS-CoV-2 Secondary Transmission in Kindergarten	<i>Many kindergarten through grade 12 (K-12) schools offering in-person learning have adopted strategies to limit the spread of SARS-CoV-2, the virus that causes COVID-19 (1). These measures include mandating use of face masks, physical distancing in classrooms, increasing ventilation withoutdoors air, identification of close contacts,* and following CDC isolation and quarantine guidance† (2). A 2-week pilot investigation was conducted to investigate occurrences of SARS-CoV-2 secondary transmission in K–12 schools in the city of Springfield, Missouri, and in St. Louis County, Missouri, during December 7-18, 2020</i>	Official Publication
June 1, 2021	CDC MMWR	MMWR- No Masks at Georgia Summer Camp June 2020	<i>Lack of mitigation procedures, masks</i>	Official Publication

August 6, 2021	CDC MMWR	Outbreak of SARS-CoV-2 Infections, Including COVID-19 Vaccine Breakthrough Infections, Associated with Large Public Gatherings — Barnstable County, Massachusetts, July 2021	Highly referenced study from Massachusetts about masking and the Delta Variant	Official Publication
May 21, 2021	CDC MMWR	MMWR- Mask Use and Ventilation Improvements to Reduce COVID-19 Incidence	To date (May 21, 2021) there have been no U.S. studies comparing COVID-19 incidence in schools that varied in implementing recommended prevention strategies, including mask requirements and ventilation improvements* (2). Using data from Georgia kindergarten through grade 5 (K-5) schools that opened for in-person learning during fall 2020, CDC and the Georgia Department of Public Health (GDPH) assessed the impact of school-level prevention strategies on incidence of COVID-19 among students and staff members before the availability of COVID-19 vaccines. Mask requirements for teachers and staff members and improved ventilation are important strategies in addition to vaccination of teachers and staff members that elementary schools could implement as part of a multicomponent approach to provide safer, in-person learning environments.	Official Publication
February 12, 2021	CDC MMWR	MMWR- Percentage of Middle and High School Students Aged 13–21 Years Attending In-Person Classes Who Reported Observing Fellow Students Wearing a Mask All the Time,* by School Setting and Activity	Mask wearing is a critical mitigation strategy in preventing the introduction and spread of SARS-CoV-2, the virus that causes coronavirus 2019 (COVID-19), within school settings. In October 2020, a sample of 3,953 middle and high school students aged 13–21 years who were attending in-person classes were asked about mask use by fellow students in several settings.	Official Publication
February 5, 2021	CDC MMWR	MMWR- Decline in COVID-19 Hospitalization Growth Rates Associated with Statewide Mask Mandates	During March 22–October 17, 2020, 10 sites participating in the COVID-19–Associated Hospitalization Surveillance Network in states with statewide mask mandates reported a decline in weekly COVID-19–associated hospitalization growth rates by up to 5.6 percentage points for adults aged 18-64 years after mandate implementation, compared with growth rates during the 4 weeks preceding implementation of the mandate.	Official Publication

December 7, 2020	CDC MMWR	MMWR- Implementing Mitigation Strategies in Early Care and Education Settings for Prevention of MMWR- SARS-CoV-2 Transmission — Eight States, September– October 2020	Implementing and monitoring adherence to recommended mitigation strategies can reduce risk for SARS-CoV-2 transmission in child care settings. These approaches could be applied to other early care and education settings that remain open for in-person learning and potentially reduce the spread of coronavirus disease 2019.	Official Publication
May 9, 2020	European Journal of Pediatrics	To mask or not to mask children to overcome COVID-19	A systematic adoption of face masks might have important implication for the opening of schools, and schools should focus some lessons on this issue to favor the use of masks among children and support parents in this work.	Official Publication
September 3, 2021	British Medical Journal	BMJ- England's schools must be made safe: An open letter to the education secretary	Both the European Centre for Disease Prevention and Control (ECDC) and the US Centers for Disease Control and Prevention (CDC) have recommended vaccination of teenagers, together with a combination of measures such as masking, small bubbles, testing, and improved ventilation in schools this autumn to keep children safer and in education. England has not followed this advice. There has been no plan for robust mitigation measures in schools to reduce the risk to children from infection and the consequences thereof, including long covid, hospitalizations, staff safety, and educational disruption. In England, there is no requirement for masks, bubbles, physical distancing or contact tracing within schools.	Publication Open Letter
May 30, 2020	Oxford Academic	Impact of Public Health Interventions on Seasonal Influenza Activity During the COVID-19 Outbreak in Korea	The role of NPIs in COVID-19 and Influenza transmission	Official Publication
February 23, 2021	Infection, Disease and Health Journal	Appropriate attitude promotes mask wearing in spite of a significant experience of varying discomfort	Despite increasing evidence to support mask effectiveness in mitigating the spread of COVID-19, there is still raging controversy regarding the use of masks. Evaluation of public perceptions, attitudes and the individuals' experience towards mask wearing is integral to ensuring reasonable compliance and allows authorities to address concerns held by the population.	Official Publication

September 3, 2021	American Academy of Pediatrics	COVID-19 town hall: Experts address schools, testing, quarantine, therapies	During the 2020-21 school year, COVID-19 transmission levels in a community played a large role in decisions to stay open or to close. This school year is different, with the availability of vaccines and improved understanding of effective mitigations (e.g., masking, 3 to 6 feet of distance, staying home when sick). Dr. Maldonado pointed to a recent study that showed during a surge of SARS-CoV-2 in North Carolina, outbreaks were uncommon within schools where masking was routine. “The risk of infection in them was really very low,” she said.	Official Publication
July 8, 2021	European Center for Disease Prevention and Control	COVID-19 in children and the role of school settings in transmission – second update	To prevent school closures from occurring, and to provide the highest level of protection to students, educational staff, and their family members, appropriate combinations of physical distancing and hygiene measures, as well as occupational safety and health measures, should be implemented in all school settings.	Technical Report

Studies/Analysis

Author	Type of investigation	Location	Study months (all 2020)	Population studied	Intervention	Outcome
Hendrix[36]	Cohort study	Hair salon in Springfield, MO (USA)	May	2 symptomatically infected stylists and 139 patrons	Universal masking in salon (by local ordinance and company policy)	No COVID-19 infections among 67 patrons who were available for follow-up
Payne[39]	Cohort study	USS Theodore Roosevelt, Guam (USA)	March	382 U.S. Navy service members	Mask wearing (self-report)	Masking reduced risk of infection by 70% (unadjusted OR 0.30, 95% CI = 0.17-0.52)
Wang Y[37]	Cohort study	Households in Beijing (China)	February-March	124 households of diagnosed cases comprising 335 people	Mask wearing by index cases or ≥ 1 household member prior to index case's diagnosis (self-report)	Masking reduced risk of secondary infection by 79% (adjusted OR 0.21, 95% CI = 0.06-0.79)
Doung-Ngern[38]	Case-control study	Bangkok (Thailand)	April- May	839 close contacts of 211 index cases	Mask wearing by contact at time of high-risk exposure to case (self-report)	Always having used a mask reduced infection by 77% (adjusted OR 0.23, 95% CI = 0.096-0.60).
Gallaway[44]	Population-based intervention	Arizona, USA	January-August	State population	Mandatory mask wearing in public	Temporal association between institution of masking policy and subsequent decline in new diagnoses.
Rader[52]	Serial cross-sectional surveys	United States	June- July	374,021 persons who completed web-based surveys	Self-reported mask wearing in grocery stores and in the homes of family or friends	A 10% increase in mask wearing tripled the likelihood of stopping community transmission (adjusted OR 3.53, 95% CI = 2.03-6.43).
Wang X[42]	Population-based intervention with trend analysis	Boston, MA (USA)	March- April	9,850 healthcare workers (HCW)	Universal masking of HCW and patients, Mass General	Estimated daily decline in new diagnoses among HCW of 0.49%

					Brigham health care system	
Mitze[43]	Population-based intervention with trend analysis	Jena (Thuringia), Germany	April	City population aged ≥ 15 years	Mandatory mask wearing in public spaces (e.g., public transport, shops)	Estimated daily decline in new diagnoses of 1.32%
Van Dyke[45]	Population-based intervention with trend analysis	Kansas, USA	June- August	State population	Mandatory mask wearing in public spaces	Estimated case rate per 100,000 decreased by 0.08 in counties with mask mandates but increased by 0.11 in those without.
Lyu and Wehby[46]	Population-based intervention with trend analysis	15 US states and Washington DC	March- May	State population	Mandatory mask wearing in public	Estimated overall initial daily decline in new diagnoses of 0.9%, grew to 2.0% at 21 days following mandates.
Joo[49]	Population-based intervention with trend analysis	United States	March-October	State populations	Mandatory mask wearing in public	Estimated decline in weekly hospitalization rates by up 5.6 percentage points for adults aged 18–64 years after mandate implementation, compared with growth rates during the 4 weeks preceding implementation of the mandate.
Guy[51]	Population-based intervention with trend analysis	2,313 counties, US	March-December	County population	Mandatory mask wearing in public	Estimated overall initial daily decline in new diagnoses of 0.5%, grew to 1.8% at 81-100 days following mandates. Estimated overall initial daily decline in deaths of 0.7%, grew to 1.9% at 81-100 days following mask mandate implementation.
Karaivanov[48]	Counterfactual modeling using national data	Canada	March-August	County population	Mandatory mask wearing indoors	Estimated weekly 24%-46% decline in new diagnoses following mask mandates.

Chernozhukov[50]	Counterfactual modeling using national data	United States	March-May	State population	Mandatory mask wearing for employees in public businesses	Nationally mandating facemasks for employees early in the pandemic could have reduced the weekly growth rate of cases and deaths by more than 10 percentage points in late April and 19%- 47% fewer deaths nationally by the end of May.
Leffler[52]		169 countries	Jan–May	County population	Mask wearing by tradition, mandate, or recommendation	Duration of mask wearing by the public was negatively associated with per-capita mortality from COVID-19.